VOL. 5 NO. 10
OCTOBER 1983

# neat notes

THE NEWSLETTER OF NEW ENGLAND APPLE TREE

## October 1983 N.E.A.T. Meeting

The October meeting will be held at 7:30 P.M. on the third Wednesday of the month (as usual), October 19, 1983 at the Mitre cafeteria. Mitre is on rte 62 in Bedford Ma. Take route 3 north from rte 128 to the first exit (rte 62).

## OCTOBER'S MEETING

Our speaker for October is John Pyra, Sales Support Analyst for Apple Computer. John will present Lisa, the new computer from Apple. See the accompanying article on Page 5.

## THE FUTURE SCHEDULE IS TENTATIVELY AS FOLLOWS:

October 19,1983-------LISA

November 16,1983-------SWAP NIGHT

December 21,1983-------??????????

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## OCTOBER HIGHLIGHTS


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## N.E.A.T. Meeting
August 17, 1983
By Alice Janian

Present: Terry Scheller, Elliot Entin, Joe Stivaletta, John Shaw, Gary Zeiss, Dave Lynn, Alice Janian.

Welcome to our new Vice President Gary Zeiss.

Meeting was opened at 7:30 by Terry Scheller. Mike Gooding (Librarian) cataloged some of available software on a disk. This catalog of software was copied to members disk as one of the two DOMs for August.

Members, who desire any of this software, should bring their disks and $1.00 for each copy. New Member's Guides were distributed to the new members. After the meeting back issues of Call-A.P.P.L.E. and APPLE ORCHARD Magazines were available to members for $1.00

Joe Stivaletta demonstrated speed of processing data with 68000 microprocessor in an Apple.

## N.E.A.T. Meeting
September 21, 1983
By Alice Janian

Present: Terry Scheller, Gary Zeiss, Joe Stivoletta, John Shaw, Alice Janian.

Meeting started at 8:10 P.M.

Announcements: No N.E.A.T. Notes this month only a flyer announcing the next meeting October 19, 1983 at 7:30 P.M. "Demonstration of Lisa." The September issue of N.E.A.T. Notes will be combined with the October Issue for a double issue.

A questionaire will be passed out to find out what the interests of the club are--group purchases perhaps?.

Topic of the evening--Data Bases. Jarad Bluestein demonstrated the List Handler. Hue Spalane demonstrated SDM (Screen Data Manager) by M. Gooding.

Meeting adjourn 9:35 P.M.

## CALENDAR
Compiled by Raines Cohen

October 15 9:30AM
Apple Guild
Massasoit Community College
call 767-1303

October 19 7:30PM
New England Apple Tree
Mitre Cafeteria
call 497-9050

October 22 2:30PM
Newton Apple Kids
Location: ?????
call 965-0033

November 2 7:00PM
New England Computer Society
Mitre Cafeteria
call 646-3080

## A WORD OF THANKS

Recently, NEAT introduced a new policy to bring more advertisements into NEAT NOTES: members will receive a 15% commission for any ads they bring in. We would like to thank Conrad Berthold for bringing in the first ad under this new policy. Conrad also contributed his commission to NEAT, so our appreciation is twice extended! (We are still taking ads for our November and December issues; Call John Shaw for details if you know any firms interested in advertising in NEAT NOTES.)

## OCTOBER'S TOPIC: LISA

By now, most of you probably already know what LISA is. Equally interesting is how LISA came into being. The story goes back to Alan Kay when he was at Xerox's Palo Alto Research Center (PARC). Kay created the metaphor of the Dynabook: a hand-held computer that could be used by anyone to manage virtually all information handling needs. [This was back in 1972, long before the advent of personal computers and such tired phrases as 'user friendly'!] At PARC, Kay and his colleagues experimented with several Dynabook prototypes to see how this lofty vision could be converted into reality.

One of the insights they discovered early on was the need for a "non-procedural" language that people could use to tell Dynabook what they wanted to do without having to tell it how to do it. This led to the development of the SMALLTALK language.

At the same time other groups were working on a problem that was equally germane to the development of Dynabook: once the masses had it what would they want to do with it? In short, how do people want a computer to manage their information handling needs? The folks at PARC came up with a pretty ingenious metaphor to help them in their task: the computer as a desk. Interestingly enough, a desk pretty much captures how most of us handle information. For instance, a desk can be covered (cluttered?) with all sorts of information including papers, folders, graphs, reports, and various other sundry items. A person sitting at this desk can examine the items present at any time. In fact, if this person is interrupted with, say, a phone call while reading a report, that person can pick up a note pad to take notes, or a sheet of graph paper to scribble sketches, put aside the note pad or graph paper when the conversation is finished, and return to the report. Information can be picked up and examined when it is needed, and discarded or buried under other sheets of information when it is not.

With the aid of high resolution graphics, the folks at PARC created prototype Dynabooks complete with the vision of a desk inside a computer; this vision included 'windows' that could contain information and that could be opened, closed, or even buried under other windows. After several years experimenting with these prototypes, the PARC folks were able to conclude what they had suspected all along: most people would not only accept the idea of a computer as a desk, but they could learn to use it in a fraction of the time required for contemporary computer environments.

Xerox collected all these novel ideas and technologies into a single product and released it to the world as: The STAR. The STAR was (and still is) a great machine, but its $16,000 price tag was out of reach for most people, including well-heeled businessmen.

In 1979, Steven Jobs, the chairman of the board of Apple Computer, paid a visit to PARC and walked away intrigued with what he had seen. He was intrigued enough to also walk off with some of PARC's most creative people to develop his own computer: LISA.

## TG Joystick Reviewed
by Jared Entin
and Benj Kleinman

"Dad when are we going to get a joystick? You know, the kind with two large buttons." Has this become a frequent question around your house lately ? If it has than maybe our review of the TG Joystick has come at just the right time.

As we see it the TG Joystick has some advantage and some disadvantages.

ADVANTAGES: The TG Joystick has automatic centering. That is, the joystick has a spring-back action. When you let go of the stick, springs pull it back to center. Most joysticks have this centering action. But, if you want, by pressing a switch on the joystick, the stick will go free. No spring-back action. The stick will stay in any position you leave it.

The TG Joystick has two big red buttons on the top panel. This is unlike other joysticks which often come with a punny button and a slide-switch that you can't find when you need it.

The joystick is easy to hold in both hands, either on a surface or off the table.

DISADVANTAGES: Like most joysticks, this one presents difficulty for a lefty to use. When you hold the joystick so that the buttons are on the left and the stick is on the right, the way a righty would hold the stick, the action of the stick is normal. The way you move the stick is the way it moves on the screen. But for a lefty, the joystick would be positioned so that the stick is on the left and the buttons are on the right. Just opposite of a lefty. Now all the joystick moves appear backward on the screen.

The TG Joystick is oversized so you must hold it in two hands. It is not so easy to use with one hand, unless you hold it between your legs.

When you want to switch between auto-centering and free action, the stick must be in the center. Otherwise, the switch is very hard to push and may break.

OTHER COMMENTS: The TG Joystick comes with a five year limited waranty, which we think is pretty good.

We think the stick part of the joystick is just the right size for kids hands, but not for bigger adult hands.

We also think, joysticks are better than paddles because if you need both paddles to get all your moves, you need four hands. Also, the bigger buttons on the joystick are much easier to use.

A few games you might want to try a joystick out on are: CANYON CLIMBER, STAR BLAZER, ABM, PEGASUS II, CASTLE WOLFENSTIEN, and MINER 2049ER.

We like the TG Joystick very much. You might find it takes a little getting use to when switching from paddles, but we think you will like it too.

Note-Jared Entin is almost 12 and Benj Kleinman is 11 years old.

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# JUST THE BASICS

## By Jack Sheehan

Well, the kids are back in school; the bathing suit is alrea dy,or about to be, put away;foot- ball starts (again);and more talk about APPLE and basics continues.

The last column discussed var ious disks available. Hope you were able to obtain some, if not all, of the ones suggested. This month I will talk about some of the vendors that attend our meet- ings.

One of the difficulties I find in presenting this kind of information is that I end up feel ing like a salesman. My business is education and I have no vested interest in the product or firms that I mention here. I only want you to know that they exist and feel they are worth mentioning.

The two most frequent vendors are Micro-Dent and Leading Edge Products,Inc. Roger Greenburg of Micro-Dent started coming to our meetings in 1981 and has been a very welcome asset. He was the guest speaker at one of the meet- ings, and demonstrated the Franklin and Basis Computers. His prices and specials have always been comparable with those of the computer shows. Last year Leading Edge decided to give Micro-Dent some competition and presented us some very interesting specials on various products. The savings of fered by both these companies are impressive.

In addition, several other companies have been present at our meetings. Rather than attempt to list them and risk the danger danger of omitting any of them, I would just like to call to your attention that they are present at our meetings. Also, their advertisements in our newsletter help support our publication.

In my meanderings I ran a- cross an interesting graphics tab let at E.L.I. Computer in Cambrid ge. This tablet is named KOALA- PAD TOUCH TABLET and sells for $116. If you have seen graphics tablets before, you must be aware that this price is several hun- dred dollars less than the ones you have seen in the past.The pad is 6" by 8" by 1" and weighs less than 1 pound. The area you draw upon is 4" by 4" and the display enlarges automatically to the size of the screen. It is easy to operate and simplifies the task of creating high resolution compu ter graphics tremendously. If you are interested in graphics then this is a must product that you should see demonstrated.

I would like to continue at the point that I left off in the first column.To refresh your mem- ory, fundamental commands were being discussed. The CATALOG,TEXT HOME, CTRL-C,CONT, CTRL-S, CTRL-X RUN, and LIST commands were covered.

The following completes the fundamental commands.

LOCK f-f=program name.This state- ment will "lock" your program on the disk so it cannot be altered or deleted.

UNLOCK f-this statement unlocks programs on the disk so that they may be altered or deleted.

N.B. An asterisk placed in front of a program name indicates that the program is locked. Also, the HELLO program should be locked.

DELETE f-this will erase a pro- gram from the disk. Experienced programmers are aware that there are methods to recover the "lost programs." The novice should con- sider the program lost.

LOAD f-this transfers a copy of the named program from the disk into the computer's memory.

SAVE f-this command will save a copy of that program that you have in memory onto the disk.

RENAME f,g- g=new file name.This statement allows you to rename your programs. If you had a program named ACCOUNTS RECEIVABLE, you could change it to AR by typing RENAME ACCOUNTS RECEIVABLE,AR

It is possible to combine two or more statements by placing a colon between the statements. For example, TEXT:HOME will put the machine into the TEXT mode, clear the screen, and place the cursor in the upper left hand corner of the screen. With practice you should feel comfortable with these commands.

Computer programs were also discussed in the first column.Programs, also referred to as files, fall into three categories:

1. Operating systems
2. Utilities
3. Application Programs

DOS is an example of an operating system. It controls the enviroment that your programs will run in. Some of the tasks it performs are input/output,debugging, and storage assignment tasks.

Utilities are routines that allow you to perform various housekeeping functions that keep the system running smoothly. Examples on your SYSTEM MASTER DISK would be the COPY program and FID The COPY program allows you to copy the entire contents of a disk onto a backup diskette. FID (File Developer) lets you catalog lock,unlock,delete, and copy all types of DOS files.It also allows the transfer of all types of programs from one disk to another.

Most beginners start with application programs. These are the games, business application packages, word processing, home finance programs, etc. Many of these are rather simple. Others, such as electronic spreadsheets and word processors, are more complicated and come with documentation That is, a sheet or a book of instructions.

Let's close this month's column with a detailed look at the CATALOG. The catalog is simply a directory of the contents of the disk. All the programs that are saved on the disk, with the exception of DOS, are displayed.

After you type the command CATALOG, the computer responds by printing the line DISK VOLUME 254 and a directory of the programs follows. If the cursor does not appear, you hit the space bar and the remainder of the directory is displayed. When the entire directory is exhausted, the cursor will appear.

The number 254 is the default volume number. This value must be an integer from 1 through 254. It is assigned when the disk is initialized. If no volume parameter is specified, the value 254 is assigned. This number represents the largest"number" of sectors that may be assigned to a file. If that number is exceeded the file's sector count starts over again at 000. This gives the impression that the disk is less full than it actually is. A sector is a unit of volume for storing programs on disks. There are 560 on a disk but only 496 of these are available for storing programs. The rest are lost to overhead.(DOS and disk diretory.)

When the directory is listed, the following format is used:

FILE TYPE VOLUME FILE NAME

The most common types of files are A and I. A indicates it is a file written in APPLESOFT. I indicates the file is written in INTEGER BASIC. A sample directory follows:

```
DISK VOLUME 254

*A 006 HELLO
 I 026 APPLEVISION
*B 020 FID
 A 051 PHONE LIST
 I 018 ANIMALS
 T 003 APPLE PROMS
```

This catalog contains six files. Two are APPLESOFT files; two are INTEGER BASIC files; one is a BIN ARY file; and the last is a TEXT or data file.

The asterisk(*)preceeding the file type indicates the file is locked. The four without the asterisk are unlocked files. To run the files preceded by an A or an I, type RUN followed by the file name. To execute the FID pro gram, type BRUN FID.The file that is preceded by the T supplies data to the ANIMALS program. It is not an executable file.

The volume number indicates the length of the file. The minimum length of any A,I, or B file is 2 sectors. The minimum length of a T file is 1 sector.

Program names must be from 1 to 30 characters long. Any name that is longer will be truncated (reduced to) 30 characters. The name must begin with a letter and may be followed by any typeable character except the comma. Every name in the catalog represents a program. The maximum number of programs that may be saved on a diskette is 105.

So far I have been able to avoid the words "bit" and "byte". A good thing can only last so long. Next month this column will start exploring the concept of me mory. It is a little more complex than some of the topics we have been discussing. Dust off your thinking caps and be prepared to wear it next month!!!


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## REVIEW: VC EXPAND/80 UPDATE MANUFACTURED BY SATURN SYSTEMS

By Bill Gunder
(Reprinted from Apple-Dayton, September 1983)

VC EXPAND/80 is the program which modifies VISICALC in memory on the Apple ][ or ][+. The following major features are supported:

1. Additional memory with Saturn RAM boards (32K, 64K, 128K).

2. Uses any of the following 80 column boards: Videx, Videoterm, ALS Smarterm, MGR Sup'R'Terminal, Vista Vision-80, or Microterm-80.

3. Automatically used the Videx soft switch.

4. Various combinations of Saturn RAM boards can provide up to approximately 176K of workspace memory.

5. Fast save/fast load option.

6. Saving a file to more than one disk.

7. Allows entry of upper or lower case letters.

### FAST SAVE/FAST LOAD FEATURE

VC EXPAND/80, Version 6.5, now has a fast save/fast load option which can save VISICALC files in binary format instead of the usual text format. Files can be saved and loaded in about 25% of the normal time. Models which require in excess of 4 minutes to load in text format now load in about 1 minute if saved in binary format as described below.

* Save by using the command "/SW".

* /SW saves the model as a binary file.

* /SS still save a file as a slow text file.

* /SL will load either type of file.

* VC EXPAND/80 will determine whether a file is text or binary.

* If a binary file is to be used by other programs, use /SL to load the file into VISICALC, and use /SS to save it back to disk as a text file.

* A model may be saved in both text and binary format.

CAUTION: Files saved in binary format with the /SW command on the Apple ][+ will not load properly on the Apple ][e. They must be save with the /SS (slow text) option on the ][+ to be used on the ][e. The documentation for VC EXPAND/80 fails to mention this limitation.

### SAVING LARGE FILES

VC EXPAND/80, Version 6.5, also allows a file to be saved on more than one disk. Files too large to fit on one disk can be placed on two disks. When the first disk is full, the program will prompt "Return to Continue on Next Diskette." Insert a new

initialized disk and press return. VC EXPAND/80 will continue saving the file on this disk. The part on the second disk will have a ".VC2" appended as a suffix to your filename.

To reload this file, follow these steps:

* Insert the first disk

* Enter "/SL filename" and press RETURN

* After the first file is loaded, the prompt "RETURN TO CONTINUE ON NEXT DISKETTE" appears.

* Remove the first disk and insert the second disk.

* Press RETURN and the rest of the file is loaded.

You will never see the "too big" message from VISICALC when saving files.

## LOWER CASE LETTERS

Three ways are provided for entering lower case letters in a VISICALC model, depending on whether your Apple has been modified.

1. Unmodified Apple:

   -Switch from upper to lower case by pressing CTRL-A.

2. Apple with shift key modif-

   -Press CTRL-B to make your keyboard work like a type-writer.
   -Press shift key and letter for upper case.

   -Release shift key for lower case letters.
   -Press CTRL-B again and your Apple is back in upper case only mode.

3. Apple with keyboard mod package (Videx Enhancer ][)

   -Follow directions supplied with this product.

## SUMMARY

VC EXPAND/80, Version 6.5, has been in use within Denis Industries since April 4, 1983. All the above features have been used since that time. The fast load/fast save feature has saved a significant amount of time on the large models we work with each day. We received a number of complaints when one Apple ][+ was replaced with the Apple ][e and the fast save feature was no longer available. Everyone wanted the old ][+ and VC EXPAND/80 returned to that site. If you already own an older version of VC EXPAND/80, it can be upgraded for a nominal fee by writing to the manufacturer. Any user of large VISICALC models on the Apple ][ should consider this program. List price is approximately $125 at local dealers.

## APPLE SERVICE POLICIES

By Joel Amromin

(SOURCE APPLE USERS GROUP)
(Reprinted from IAC Compiler #3)

At the Apple //e workshop the weekend of March 4-6 1983, Apple discussed the formal procedures for repair service and technical assistance. This article is a summary of that presentation. Where appropriate, I will interject some of the comments and criticisms that were presented by the delegates to the conference.

In addition to the standard 90-day warranty on all Apple products, there are two kinds of "service contracts"a available: 1) "AppleCare" and 2) RCA Field Service. The AppleCare program replaces the old extended warranty. Like the extended warranty, it is a renewable one year extension of the factory warranty. Unlike the previous extended warranty, you pay separately for each item that is included in the contract. That is, there is a separate rate for the CPU, a disk drive, a monitor, graphics tablet, etc. The annual cost for a basic single drive system with monitor is still about $200 per year. That is based on an average cost of about 9% per year of the retail price of the system. If you add something to your system during the term of the contract, it can be added to the contract on a prorated basis.

The AppleCare program can be started at any time, but it is recommended that you purchase the contract when you buy a system. That gives you a full 15 month warranty.

The AppleCare program covers all Apple hardware and can be obtained for any Apple product up to and including the Lisa (What? you don't own three of them????). You must bring the computer to your dealer for service. All Apple dealers are Level 1 service centers (more about that later). NOTE: you don't have to take it to the dealer you bought it from. The warranty is good at any Apple dealership.

Why spend $200 per year on such a reliable product as the Apple Computer? Well, let's face it, the chances of spending that much on service are pretty slim. However, what you are paying for is much faster service. Here is an excerpt from the AppleCare brochure:

Using Apple diagnostics and modular-based repair, the Apple technician is able to quickly isolate the problem to a particular exchange module, such as the keyboard or power supply, and replace the module in no time. As an authorized Apple Service Center, your Dealer carries a full inventory of replacement modules and parts, assuring that your Apple equipment is out of the shop and back to work quickly. In fact, many repairs can be performed in minutes -- often while you wait.

I work in a computer store. Our service department is REQUIRED by Apple to maintain a spare parts inventory with certain specified items. The list is very complete. For instance, just to qualify as a Lisa dealer, the store must purchase a $10,000 spare parts kit.

If you don't have the AppleCare contract (and are out of warranty), then service is performed in a different manner. The technician may now start working at the chip level to fix your computer. Apple does not train technicians how to do this and you are at the mercy of the technicians. One of the big complaints at the conference was that a lot of dealers have incompetent technicians. Apple showed some concern about that but was unprepared to address the problem at the conference. However, they did express interest in trying to resolve the problem. In a minute, I'll get into redress methods. Without the service policy, a technician might exchange your motherboard and charge you a fairly stiff fee, even though the motherboard may not even be the problem. Or a technician may save you a few dollars by doing component level repair, but keep your Apple for a week to do it. The point is, without the service contract, you don't know what to expect.

Apple wants the owner of the computer to take all service and technical support questions to the dealer. Apple no longer has a customer hot-line in Cupertino. A lot of people were upset that Apple seems so aloof from the customer. However, Apple replied that it was becoming impossible to take the thousands of phone calls a day, most of which were simple questions that the dealer should be able to answer (e.g. "Why won't my old DOS 3.2 disks run on my Apple now that I have Pascal?"). If your dealer can't answer the questions you have, there are regional Level 2 service centers with dealer hot-lines. Your dealer is not allowed to give out those numbers, but can call on your behalf to get assistance. As a dealer myself, I can honestly say the system works. Twice in the last month, I have called the regional center with software questions and received accurate answers while the customer was in the store.

If your dealer can't solve your problems, either in service or technical support, or if you feel that your dealer has mistreated you, you have should contact the Level 2 Regional Service Center. Apple says they want to know about problems you are having. If you can't get satisfaction from one dealer and go to another, but don't tell Apple about the mistreatment you may have received, Apple won't know about it. Apple has published the addresses of the Regional Centers. If you need this assistance, write to the attention of the Service Manager at the address indicated for your area. The list of Regional Service Centers is in a separate file called "SERVICE-CENTERS" (on this disk). The Regional Service Center will need certain specific information from you. Include all of this information in your letter:

1. Model of your Apple system.
2. Serial number.
3. System purchase date.
4. AppleCare Agreement number (if applicable).
5. Your dealer's name and address.
6. The name of the person you dealt with.
7. Your name and phone number.
8. The nature of the problem.

Well, let's suppose that you still don't get satisfaction. You can write to Mecca (Apple Computer, Inc.). Send the same information listed above to:

Service Manager
Apple Computer, Inc.
20525 Mariani Avenue
Cupertino, CA 95014

I would suggest that in all correspondence with either the Level 2 center or with Apple Computer, you include photo-copies of all relevant documents (invoices, service tickets, previous correspondence, etc.). One of the problems which came up at the conference was that mail can take a long time reaching the right person at Apple once it gets into the system. Many of the Apple people were very upset about that, too. So don't expect an answer from Apple in 24-hours. Apple is trying to find ways to improve and speed up the process. It will help if you address your letters exactly as shown in the Level 2 list and as above. And be sure to send it to the attention of the Service Manager.

The general concensus at the meeting was that Apple has fallen behind in quality of service. However, it was also felt by many that the conference was a start by Apple to try to "clean up their act. The formalization of the three tiered service system is part of that attempt. While the system was in place for some time, it was never formally put into operation. Apple expressed an interest in working with user groups to improve the service situation. We will see what happens. The people I talked to from some of the IAC member groups felt rather good about the final results of the meeting and that Apple was sincere about moving ahead with improvement. One possibility is that consideration is finally being given to setting up some user groups as service centers. The groups would have to take the same training and purchase spare parts as the dealers. I would anticipate several interesting changes in the course of the next year.

I will only briefly discuss the RCA Field Service Contract. This will appeal primarily to businesses and large corporations. RCA Service Company is a division of RCA which performs field service on many different kinds of equipment. Apple has contracted with RCA to provide service in the field on Apple equipment. The user contracts with RCA. It will not be cheap. But you will get the same sort of immediate field service that you get on office equipment like Selectric type-writers. RCA also services many non-Apple peripherals that you may have connected in your system. RCA can also provide installation, preventive maintenance, and other specialized services upon request.

FOR MORE INFORMATION:

To get more information about the various service options and procedures for Apple Computer equipment, you can request the following brocures from your dealer:

1. Your Guide to Apple Service and Support
2. Protect your Apple with AppleCare

**Apple Regional Service Centers**
(current as of Febuary 1983)

United States

EASTERN

CT, DE, MA, ME, NH, NJ,
RI, VT, Eastern PA
171 Locke Dr.
Marlborough, MA 01752

AL, DC, FL, GA, MD, MS,
SC, TN, VA
P.O. Box 241028
8227 Arrowridge Blvd.
Charlotte, NC 28224

CENTRAL

IN, KY, MI, MN, ND, OH,
SD, WI, WV, Northern IL,
Western PA
5655 Meadow Brook
Industrial Ct.
Rolling Meadows, IL 60008

AR, IA, KS, LA, MO, OK,
Southern IL, Eastern NE,
Eastern TX
1050 Venture Ct.
Carrollton, TX 75006

WESTERN

AK, AZ, CO, ID, MT, NM,
OR, UT, WA, Northern CA,
Western NE, Northern NV,
Western TX
1335 Bordeaux Drive
Sunnyvale, CA 94086

Southern CA, Southern NV, HI
17275 Derian Ave.
Irvine, CA 92713

CANADA
Apple Computer Canada, Inc.
875 Don Mills Rd.
Don Mills, Ontario
Canada M3C1V9

---

## MACHINE LANGUAGE SPOKEN HERE

By Dr. J

The doctor is in.

Welcome back from Summer! I have just returned from my Summer and have a whole series of new machine language routines to share with you.

This month we are going to begin our long awaited journey into the land of Applesoft strings! String handling in machine language is pretty impressive because most string operations simply move or compare bytes from one memory location to another; the 6502 is one of the most efficient processors around for those types of operations, and the speed advantage over normal Applesoft can exceed a factor of 50!

To begin our discussion, we ask the following question: how does Applesoft store strings? Unlike floating point variables (which always take up 5 bytes per number in memory) or integer variables (which always take up 2 bytes per number in memory), a string variable can have any length between 0 and 255 bytes. In fact, the length of a string variable is never static, but can change as conditions demand it. Applesoft accomplishes this trick using a storage scheme called 'dynamic memory allocation'. Every string has a 3-byte descriptor that is stored at a fixed location in memory. The first byte in this descriptor is set equal to the current length of the string. The last two bytes in this descriptor indicate the starting address (low

byte/high byte) where the actual string is found. For example, the triplet:

$05 $E0 $95

indicates that the first character in the string can be found at the address $95E0, and the string has a length of 5 bytes. A good analogy is a company that, due to swings in business, grows and shrinks. Every time it changes size it must move to new quarters, but it maintains a fixed post office box to keep everyone informed of its whereabouts. The fixed three-byte descriptor is equivalent to the post office box: it will tell us at all times where we can find the string and what is its length.

We can find the location of a string's three-byte descriptor using our friend: PTRGET, the Applesoft ROM routine that locates pointers to variables. When we played with floating point variables, PTRGET returned the low/high byte address where we could find the value to the corresponding variable. When we play with strings, PTRGET does not point us to the value of the string, but points us to the location in memory where we can find that string's three-byte descriptor. For example, suppose the three byte descriptor to a string is stored beginning at memory location $871:

$871: 05 E0 95

Upon calling PTRGET for this variable, the Accumulator will return with the value of the low byte of the descriptor address ($71) and the Y-register will return with the value of the high byte ($08). Returning to the

```
SOURCE FILE: NEAT LISTING.4

0000:    1 ;*************************************
0000:    2 ;*                                   *
0000:    3 ;*  NEAT NOTE LISTING 1              *
0000:    4 ;*                                   *
0000:    5 ;*       BY DR. J.                   *
0000:    6 ;*                                   *
0000:    7 ;*    THIS IS A GENERAL              *
0000:    8 ;* STRING INPUT ROUTINE              *
0000:    9 ;*                                   *
0000:   10 ;*      W/THANKS TO                  *
0000:   11 ;*    R.M. MOTTOLA                   *
0000:   12 ;*                                   *
0000:   13 ;*************************************
0000:   14 ;
000D:   15 CHARAC  EQU  $0D     ; USED BY SUBROUTINE STRLT2
000E:   16 ENDCHR  EQU  $0E     ; DITTO
0085:   17 FORPNT  EQU  $85     ; GENERAL POINTER
0087:   18 TEMTXTL EQU  $87     ; TEMP. L.O. BYTE STORAGE FOR
0000:   19 ; THE TEXT POINTER
0087:   20 CHRGOT  EQU  $B7     ; ENTRY POINT TO RETURN TO BASIC
00B8:   21 TXTPTL  EQU  $B8     ; L.O. BYTE OF THE TEXT POINTER
0200:   22 LINBUF  EQU  $200    ; INPUT BUFFER
D52C:   23 INLIN   EQU  $D52C   ; TEXT INPUT ROUTINE
D863:   24 BREAK   EQU  $D863   ; BREAK
DEBE:   25 CHKCOM  EQU  $DEBE   ; ROUTINE TO CHECK FOR A COMMA
DFE3:   26 PTRGET  EQU  $DFE3   ; ROUTINE TO GET STRING POINTERS
E3ED:   27 STRLT2  EQU  $E3ED   ; ROUTINE TO BUILD A DESCRIPTOR
0000:   28 ; FOR A STRING
DA7B:   29 LET2    EQU  $DA7B   ; ASSIGNS MEMORY TO A STRING (AND THEREBY)
0000:   30 ; ASSIGNS A NEW VALUE TO A STRING)
E73D:   31 TXTLIT  EQU  $E73D   ; RESETS SOME POINTERS FOR LET2
0000:   32 ;
```

post office analogy we used earlier, the two byte pair (Y,A) contains the address to the post office box, which in turn contains the address to the string!

---

This month's utility does not show off our newly acquired knowledge about strings; I'll save such a routine for next month. Instead, I wanted to reprint a machine language program I used last November: a general purpose string entry program. Many of you have asked me how to enter strings with embedded commas; Applesoft uses the comma (and colon and semicolon) to separate one string from another during input. The machine language listing accompanying this month's column is a general purpose string entry program, and will accept strings entered from the keyboard, or read from DOS Text files. This routine is not my own invention, but was originally published by R.M. MOTTOLA in NIBBLE magazine [Vol. 2/No.2 1981].

Once loaded into memory, you can read strings from both immediate mode and from an Applesoft program with the command:

```
CALL 880,A$
```

This command will read a string and assign it to the string variable A$. [You can, in fact, use any string variable; I simply used A$ for convenience.]

Well, that pretty much wraps up the column for this month. Next month, we will write a routine to compare two string variables.

Till then, good luck!

The doctor is out.

```
                    33 ; BEGIN PROGRAM
                    34 ;
                    ---- NEXT OBJECT FILE NAME IS NEAT LISTING.4.OBJ0
0000:               35          ORG  $370       ; ROGRAM BEGINS AT DECIMAL 880
0370:               36          JSR  CHKCOM     ; REMOVE COMMA
0370:20 BE DE       37          JSR  PTRGET     ; GET POINTER FOR THIS STRING
0373:20 E3 DF       38          STA  FORPNT     ; AND STORE IT
0376:85 85          39          STY  FORPNT+1
0378:84 86          40          LDA  TXTPTL     ; SAVE CURRENT TEXT POINTER
037A:A5 B8          41          STA  TEMTXTL    ; AS WELL
037C:85 87          42          LDA  TXTPTL+1
037E:A5 B9          43          STA  TEMTXTL+1
0380:85 88          44          JSR  INLIN      ; READ A LINE OF INPUT
0382:20 2C D5       45          LDA  LINBUF     ; CHECK FOR CTRL-C
0385:AD 00 02       46          CMP  #3
0388:C9 03          47          BNE  JUMP       ; IF NOT, CONTINUE WITH THE STRING
038A:D0 03          48          JMP  BREAK      ; ELSE BREAK
038C:4C 63 D8       49 JUMP     LDA  #$0
038F:A9 00          50          STA  CHARAC     ; STORE PROPER END OF LINE CHARACTER
0391:85 0D          51          STA  ENDCHR     ; IN CHARAC AND ENDCHR
0393:85 0E          52          LDA  #<LINBUF   ; GET L.O. ADDRESS TO INPUT BUFFER
0395:A9 00          53          LDY  #>LINBUF   ; GET H.O. ADDRESS FOR SAME
0397:A0 02          54          JSR  STRLT2     ; BUILD A DESCRIPTOR FOR THIS STRING
0399:20 ED E3       55 ; GET THIS DESCRIPTOR FROM (FACMO, FACMO+1) AND COPY IT
039C:               56 ; TO (FORPNT,FORPNT+1)
039C:20 3D E7       57          JSR  TXTLIT
039F:20 7B DA       58          JSR  LET2
03A2:A5 87          59          LDA  TEMTXTL    ; RECOVER THE TEXT POINTER
03A4:85 B8          60          STA  TXTPTL
03A6:A5 88          61          LDA  TEMTXTL+1
03A8:85 B9          62          STA  TXTPTL+1
03AA:20 B7 00       63          JSR  CHRGOT
03AD:60             64          RTS
```

## CATALOGING BY FILE TYPE

By Lee Reynolds
(Reprinted from the Apple Computer Enjoyment Society newsletter: BITS & BYTES)

The idea for this program was given to me by a fellow named Erv Edge, who lives in Alaska, and who called me up one morning to talk about an article I had written called "CATALOGing With Wildcards". (This article has appeared both in this newsletter, and in the book "All about DOS", published by Call -A.P.P.L.E.) He had recently written a modification to DOS which expanded upon my modification in various ways, and which also incorporated several other improvements to the Disk Operating System. He kindly sent me a copy of his program for review before he wrote an article about it to be submitted to Call -A.P.P.L.E. I decided to borrow one of his ideas - cataloging by file type - and change it a bit. The result is the present article.

The Applesoft program listed with this article installs the new command, which I have chosen to name "CATFT" - for CATALOG BY FILE TYPE - in place of the DOS command "CHAIN". (Hardly anybody ever uses this command since it only works with INTEGER basic; do not, however, confuse the DOS CHAIN command with the CHAIN program on the System Master disk. Another reason is that my new DOS command has the same number of letters in it as the old one, so replacement of the name in the dos command table is made easier.)

First let me explain what the new command, once it is installed, does for you: you can now type in a command such as this:

```
CATFT A,S6,D2
```

and what you will get is a normal CATALOG of slot 6, drive 2, except ONLY Applesoft (type = "A") files will be listed. The slot and drive numbers, as in the normal CATALOG command, ar optional. The "A" for file type can also be: "B" for Binary, or "I" for Integer, or "T" for Text, or any other valid types. ("S" and "R" files will now and then be encountered, for instance; do you know what they are?)

Now then, about the Applesoft program "Install CATFT Command"; here is what it does, following the explanatory PRINT statements: S.H. Lam's Routine (in line 100) is used to store various hexadecimal numbers at certain places in DOS in order to install the new command in place of "CHAIN". The four hex values stored at $A894 are the last four letters of the new command, overlaying the last four letters of "CHAIN". DOS will now be looking for the CATFT command, but CHAIN will no longer be accepted. The value stored at $A912 modifies a table in DOS so that the new command will accept a file name (which in this case should only be a single letter corresponding to file type to be CATALOGed), as well as the optional slot and drive.

The 12 hex values stored beginning at $A4F0 replace the old CHAIN command logic with new logic for CATFT. (See the commented assembly language below, with accompanying explanation, if you understand

Apple assembly language.) The 41 hex values stored beginning at $BA69 accomplish another part of the new command's logic. This location was chosen because the book "Beneath Apple DOS" mentions that one of the several unused areas of DOS include one starting at that address and extending through $BA95. The new logic will use up all but the last 3 of those locations. Finally, two instructions in the CATALOG hardware routine in DOS, beginning at $ADDB, must be replaced by three new instructions (two of them being NOPs.) Now let us look at the assembly listing of my CATFT routine, Listing 1. (Those readers who know nothing about assembly language may instead wish to start typing in the Applesoft program. Please note that this program only works for a 48K DOS. does anybody have 32K anymore? If so, you can contact me to find out what changes to make to the program to make it work for your system's memory size.)

The logic beginning at $A4F0, replacing the old CHAIN command logic, is very simple. All it does is: (1) pick up the first letter ot the "file name" that was typed in on the CATFT command and store it away for later use; (2) put a zero - which happens to be the present value of the Y register - over this first letter, so DOS won't attempt to allocate a buffer for the file name; and (3) jump to the logic executed by the CATALOG command.

The logic beginning at location $BA69 does the following: (1) find which command - CATALOG or CATFT - was typed by checking the value of the "command index" in location $AA5F; (2) if the command was not CATFT, then it executes the instructions that were replaced at $ADDB in order to come here, and then continue with the normal CATALOG sequence (print locked/unlocked flag, file type, file size, and file name; etc.) (3) on the other hand, for CATFT, the routine gets the location in the directory entry currently being processed which contains the locked/unlocked flag and file type code, in order to check whether the current entry should be printed because it matches the file type being requested. If you study the description of the directory contents given on pages 130 and 131 of the DOS manual, you will be able to understand why the "arithmetic shift left loop" is able to get the current entry's file type. If there is no match with the file type requested, the routine jumps back to a part of the CATALOG command handler where the next directory entry is accessed.

Unless you know machine language, have studied "Beneath Apple DOS" and the DOS Reference Manual, you probably will not be able to make much of how this routine works. If that is the case, at least I think you might find this new command both interesting and useful...

By the way, since all changes are made within DOS itself, you can now create new disks with the modified DOS on it. Just start up your Apple with a normal DOS disk (such as the System Master), run either the Applesoft or assembly language program to install the CATFT command, then INIT a new disk. The new disk will now have the modified DOS on it.

```
10  HOME : PRINT "THIS PROGRAM IN
    STALLS A NEW COMMAND": PRINT
    "IN PLACE OF THE CHAIN COMMA
    ND ON A": PRINT "48K DOS 3.3
     SYSTEM..."
20  PRINT "THE NEW COMMAND CAN BE
     USED TO DO A": PRINT "CATAL
    OG OF ALL FILES OF A GIVEN F
    ILE": PRINT "TYPE."
30  PRINT "EXAMPLE: CATFT A,S6,D1
    "
40 A$ = "A894:41 54 46 D4 N A912:
    30 N A4F0:AD 75 AA 8D 92 BA
    8C 75 AA 4C 6E A5": GOSUB 10
    0: CALL  - 144
50 A$ = "BA69: AD 5F AA C9 08 D0
    17 BD C8 B4 0A A0 07 0A B0 0
    3 88 D0 FA B9 A7 B3 CD 92 BA
     F0 03 4C 25 AE AE 9C B3 A0
    A0 BD C8 B4 4C E0 AD": GOSUB
    100: CALL  - 144
60 A$ = "ADDB:4C 69 BA EA EA": GOSUB
    100: CALL  - 144
70  PRINT : PRINT "CATFT COMMAND
    INSTALLED": END
100 A$ = A$ + " N D8236": FOR I =
    1 TO  LEN (A$): POKE 511 + I
    , ASC ( MID$ (A$,I,1)) + 128
    : NEXT : POKE 72,0: RETURN
```

```
SOURCE FILE: CATFT
0000:                1 ;
0000:                2 ; CATFT
0000:                3 ;
----- NEXT OBJECT FILE NAME IS CATFT.OBJ0
A4F0:                4          ORG  $A4F0
A4F0:AD 75 AA        5 CATFT    LDA  $AA75    ; FIRST CHARACTER OF FILE NAME
A4F3:8D 92 BA        6          STA  $BA92    ; SAVE AS FILE TYPE TO CHECK
A4F6:8C 75 AA        7          STY  $AA75    ; ZERO NAME FIELD SO NO BUFFER ALLOC.
A4F9:4C 6E A5        8          JMP  $A56E    ; JUMP TO CATALOG COMMAND
A4FC:                9 ;
A4FC:               10 ; ROUTINE AT $ADDB
A4FC:               11 ;
----- NEXT OBJECT FILE NAME IS CATFT.OBJ1
ADDB:               12          ORG  $ADDB
ADDB:4C 69 BA       13          JMP  $BA69    ; GO CHECK COMMAND TYPE
ADDE:EA             14          NOP
ADDF:EA             15          NOP
ADE0:               16 ;
ADE0:               17 ; ROUTINE AT $BA69
ADE0:               18 ;
----- NEXT OBJECT FILE NAME IS CATFT.OBJ2
BA69:               19          ORG  $BA69
BA69:AD 5F AA       20 CHKCMD   LDA  $AA5F    ; GET DOS COMMAND INDEX
BA6C:C9 08          21          CMP  #$08     ; IS IT CATFT INDEX?
BA6E:D0 17          22          BNE  SETUP    ; BRANCH IF NOT
BA70:BD C8 B4       23          LDA  $B4C8,X  GET FILETYPE FROM DIRECTORY ENTRY
BA73:0A             24          ASL  A        ; IGNORE THE LOCKED/UNLOCKED BIT
BA74:A0 07          25          LDY  #$07     ; NUMBER OF BITS TO CHECK
BA76:0A             26 SHIFT    ASL  A        ; SHIFT NEXT BIT INTO "CARRY"
BA77:B0 03          27          BCS  FTYPE    ; CARRY SET WHEN FILE TYPE FOUND
BA79:88             28          DEY           ; DECREMENT LOOP COUNTER
BA7A:D0 FA          29          BNE  SHIFT    ; BRANCH ALWAYS
BA7C:B9 A7 B3       30 FTYPE    LDA  $B3A7,Y  ; GET FILE TYPE FROM DOS TABLE
BA7F:CD 92 BA       31          CMP  $BA92    ; COMPARE TO FILE TYPE FROM COMMAND
BA82:F0 03          32          BEQ  SETUP    ; BRANCH IF EQUAL
BA84:4C 25 AE       33          JMP  $AE25    ; GO GET NEXT FILE FROM DIR.
BA87:AE 9C B3       34 SETUP    LDX  $B39C    ; RESTORE INDEX INTO DIRECTORY
BA8A:A0 A0          35          LDY  #$A0     ; LOAD Y-REG WITH ASCII SPACE
BA8C:BD C8 B4       36          LDA  $B4C8,X  ; FILE TYPE/LOCKED FROM DIRECTORY
BA8F:4C E0 AD       37          JMP  $ADE0    ; RETURN TO PRINT FILE LOCKED/UNLOCKED

*** SUCCESSFUL ASSEMBLY: NO ERRORS
```

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8. In what area can the club assist you? _____
9. Are you available to assist other members? _____
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| Pascal | I | II | III | IV | V | VI | | | | | | |
| D.O.M.1980 | | | | | M | J | J | A | S | O | N | D |
| D.O.M.1981 | J | F | M | A | M | J | J | A | S | O | N | D |
| D.O.M.1982 | J | F | M | A | M | J | J | A | S | O | N | D |

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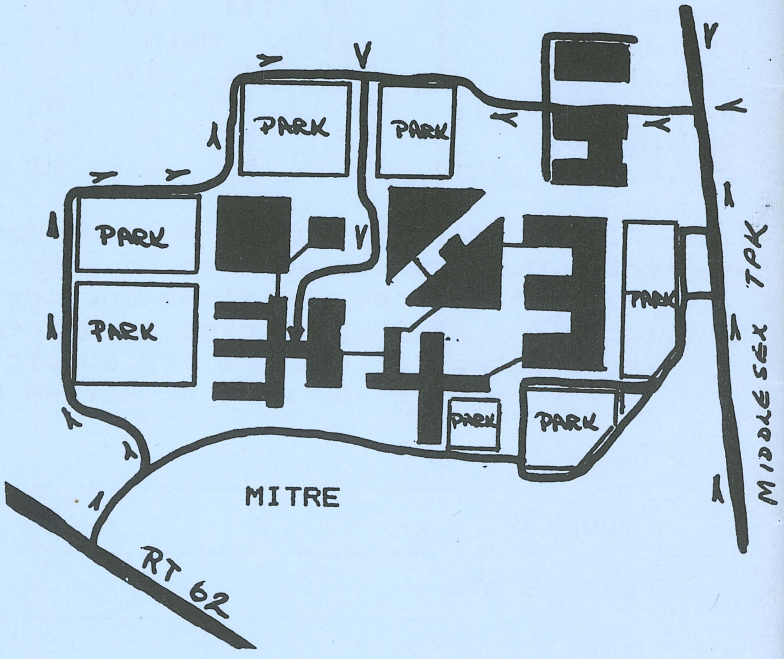
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